



PERCHLORATE

Environmental Epidemiology and Toxicology Division

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The Texas Department of Health (TDH) Division of Environmental Epidemiology and Toxicology has prepared this fact sheet to provide general information and answer some of the most frequently asked questions (FAQs) about perchlorate. For more information, call the Division of Environmental Epidemiology and Toxicology of TDH at (512) 458-7269.

HIGHLIGHTS: Exposure to high levels of perchlorate can effect the thyroid gland. Women who are pregnant and their fetuses may be more susceptible since pregnancy itself stresses thyroid function. To date, there has not been an organized survey of perchlorate occurrence in drinking water systems and therefore a regulation for perchlorate does not exist. Some public water systems were required to monitor for perchlorate beginning in January 2001.

What is Perchlorate?

Perchlorate is a compound made up of chlorine and oxygen that either can be found in nature or made by man. It has been widely used in solid propellant fuels for rockets and missiles as well as in other products such as explosives, fireworks, road flares, air-bag inflation systems, lubricating oils, nuclear reactors, and electronic tubes. Perchlorates also are used in tanning and leather finishing, electroplating, aluminum refining, rubber manufacture, and in paint and enamel production.

What happens to perchlorate when it enters the environment?

- ▶ perchlorate salts that get into the air fall to the ground over time
- ▶ other perchlorates dissolve in water and can remain for decades under normal conditions

How might I be exposed to perchlorate?

- ▶ by drinking water that contains perchlorate
- ▶ by inhaling dust contaminated with perchlorate
- ▶ contact with water containing perchlorate is not expected to be a problem since perchlorates do not readily pass through the skin

How can perchlorates affect my health?

Perchlorate interferes with iodide uptake into the thyroid gland. Because iodide is needed to make thyroid hormones, it may affect how the thyroid functions. Adverse health effects associated with exposure to perchlorates are expected to be similar to those caused by iodine deficiency.

In adults, the thyroid helps to regulate metabolism. When thyroid function is affected, thyroid hormone production may decrease which can adversely affect the metabolic rate, causing thyroid stimulating hormone (TSH) to go up. It may induce signs or symptoms of hypothyroidism, enlargements of the thyroid gland, and potentially increase the risk of thyroid tumors.

Pregnancy puts an added stress on the thyroid gland. Affecting thyroid function in expectant mothers may impact the fetus and newborn resulting in changes in behavior, delayed development, and decreased ability to learn. Women with marginal iodine intake before and during pregnancy may develop clinical or subclinical hypothyroidism. Under these conditions pregnant women are at increased risk for pregnancy complications such as preeclampsia (a potentially fatal condition), placental abruption (premature separation of the placenta, possibly resulting in fetal death), and low birth weight infants. Thus, exposure to perchlorate in drinking water may be a greater concern for pregnant women and the developing fetus.

**Texas Department of Health, Public Health Service
Health Assessment and Toxicology Program**

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Perchlorate Fact Sheet Internet address is www.tdh.state.tx.us/epitox

In children, the thyroid plays a major role in proper development. Infants and small children have less reserve of iodide in their thyroid glands than adults, putting them at a higher risk.

Infants who breast feed may be at greater risk. The sole source of iodide for the breast feeding infant is the mother's milk. Not only do these infants get perchlorate from the breast milk, they get less iodide from the mother because the perchlorate in the mother's system decreases the secretion of iodide into breast milk. Thus, the breast-feeding infant would be receiving an agent that competes with the uptake of iodide by the thyroid and at the same time would be in short supply of dietary iodide.

Is there a medical test to show whether I've been exposed to perchlorate?

- ▶ perchlorate quickly leaves the body in the urine
- ▶ most labs can not test perchlorate in urine
- ▶ your doctor can do a blood test to determine if your thyroid gland is working properly

Has the federal government made recommendations to protect human health?

Currently, a National Primary Drinking Water Regulation for perchlorate does not exist. In March 1998, perchlorate was listed as a contaminant that required additional research and occurrence information before regulatory determinations could be considered. Beginning January 2001, all large public water systems and a representative sample of small public water systems were required to monitor for perchlorate.

Where can I get more information? For more information, contact the Texas Department of Health, Environmental Epidemiology and Toxicology Division, 1100 West 49th Street, Austin, Texas 78756. Phone 1-800-588-1248, FAX 512-458-7222.